

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. (CURRENTLY AMENDED): A restoration method for restoring a flow of packets in a packet transfer network composed of a plurality of routers, comprising the steps of:

a) setting a working route and a reserved route in the packet transfer network, wherein the reserved route branches from the working route at a start-point router;

at each of routers other than the start-point router on the working route,

b) determining whether a failure occurs in a link to a next-hop router on the working route;

c) determining whether an incoming packet is to be protected or is not to be protected;

d) when a packet to be protected is received in case of occurrence of the failure, sending the packet to be protected back to the start-point router, and when a packet which is not to be protected is received in case of occurrence of the failure, the packet not to be protected is not sent back to the start point router; and

at the start-point router,

e) when receiving back the packet to be protected, forwarding it to the reserved route.

2. (ORIGINAL): The restoration method according to claim 1, wherein, when the start-point router receives a packet to be protected in case of occurrence of the failure, the start-point router forwards it to the reserved route.

3. (PREVIOUSLY PRESENTED): The restoration method according to claim 1, wherein the working and reserved routes are set by a network management server controlling each of the routers in the packet transfer network.

4. (ORIGINAL): The restoration method according to claim 1, wherein the step (d) comprises the steps of:

- d.1) when a packet to be protected is received in case of occurrence of the failure, adding a protection control header to the packet to be protected to produce a return packet; and
- d.2) sending the return packet back to the start-point router, and

the step (e) comprises the steps of:

- e.1) receiving the return packet back from a next-hop router on the working route;
- e.2) removing the protection control header from the return packet to produce an original packet to be protected; and
- e.3) forwarding the original packet to the reserved route.

5. (CURRENTLY AMENDED): A packet transfer network comprising:

- a plurality of routers; and
- a network management server for designing a packet protection network in which a working route and a reserved route are set by controlling designated routers which are involved in the working and reserved routes, wherein the reserved route branches from the working route at a start-point router,

wherein each of a plurality of designated routers forming the working route, comprises:
a line failure detector for detecting a failure occurring in a link to a next-hop router on the working route;

a table for storing information indicating where a packet to be protected is forwarded to;
and

a packet distribution controller for, when a packet to be protected is received in case of occurrence of the failure, forwarding the packet to be protected depending on the information stored in the table, and when a packet not to be protected is received in case of occurrence of the failure, not forwarding the packet not to be protected,

wherein the designated routers other than the start-point router forwards the packet to be protected back to the start-point router in case of occurrence of the failure, wherein the start-point router forwards the packet to be protected received back from another router to the reserved route.

6. (ORIGINAL): The packet transfer network according to claim 5, wherein the start-point router is an ingress router to the packet protection network.

7. (ORIGINAL): The packet transfer network according to claim 5, wherein the network management server transfers the information of the table to each of the designated routers depending on which one of the start-point router and a transit router the designated router is.

8. (CURRENTLY AMENDED): A router in a packet protection network in which a working route and a reserved route are set by controlling designated routers which are involved in the working and reserved routes, wherein the reserved route branches from the working route at a start-point router, comprising:

a line failure detector for detecting a failure occurring in a link to a next-hop router on the working route;

a table for storing information indicating where a packet to be protected is forwarded to;
and

a packet distribution controller for, when a packet to be protected is received in case of occurrence of the failure, forwarding the packet to be protected depending on the information stored in the table, and when a packet not to be protected is received in case of occurrence of the failure, not forwarding the packet not to be protected.

wherein the designated routers other than the start-point router forwards the packet to be protected back to the start-point router in case of occurrence of the failure, wherein the start-point router forwards the packet to be protected received back from another router to the reserved route.

9. (ORIGINAL): The router according to claim 8, wherein the start-point router is an ingress router to the packet protection network.

10. (ORIGINAL): The router according to claim 8, wherein the information of the table in each of the designated routers is downloaded from a network management server of the packet

protection network depending on which one of the start-point router and a transit router the designated router is.

11. (CURRENTLY AMENDED): A recording medium storing a computer-readable program for instructing a computer to restore a flow of packets in a packet transfer network composed of a plurality of routers, the computer-readable program comprising the steps of:

at a network management server,

a) setting a working route and a reserved route in the packet transfer network, wherein the reserved route branches from the working route at a start-point router;

at each of routers other than the start-point router on the working route,

b) determining whether a failure occurs in a link to a next-hop router on the working route;

c) determining whether an incoming packet is to be protected, or is not to be protected;

d) when a packet to be protected is received in case of occurrence of the failure, sending the packet to be protected back to the start-point router, and when a packet which is not to be protected is received in case of occurrence of the failure, the packet not to be protected is not sent back to the start point router; and

at the start-point router,

e) when receiving back the packet to be protected, forwarding it to the reserved route.